

**Optical fibre chemical sensor for trace vanadium(V) determination based on newly synthesized palm based fatty hydroxamic acid immobilized in polyvinyl chloride membrane**

**ABSTRACT**

Fatty hydroxamic acid (FHA) immobilized in polyvinyl chloride (PVC) has been studied as a sensor element of an optical fibre chemical sensor for V(V). By using this instrument, V(V) in solution has been determined in the log concentration range of 0–2.5 (i.e. 1.0–300 mg/L). The detection limit was 1.0 mg/L. The relative standard deviation (R.S.D.) of the method for the reproducibility study at V(V) concentration of 200 mg/L and 300 mg/L were calculated to be 2.9% and 2.0%, respectively. Interference from foreign ions was also studied at 1:1 mole ratio of V(V):foreign ions. It was found that, Fe(III) ion interfered most in the determination of vanadium(V). Excellent agreement with ICP-AES method was achieved when the proposed method was applied towards determination of V(V).

**Keyword:** Optical fibre, PVC membrane, V(V) sensor, Fatty hydroxamic acid